AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Previously presented): A voltage-current converting circuit which outputs a current in accordance with a voltage input thereto, comprising:

an active device having an input terminal, an output terminal, and a grounded terminal, and carrying out voltage-current conversion;

a resistor circuit electrically connected in series to said active device through said grounded terminal of said active device, and controlling a conversion gain of said active device; and

a voltage-controller electrically connected to a connection node at which said active device and said resistor circuit are electrically connected to each other,

wherein said resistor circuit has a variable resistance, and includes a negative resistance device, and

said voltage-controller controls a voltage of said connection node and compensates for voltage fluctuation caused at said connection node by variance of a resistance of said negative resistance device.

2. (Original): The voltage-current converting circuit as set forth in claim 1, wherein said active device is comprised of a pair of active devices each operating differentially with each other, and each having an input terminal, an output terminal, and a grounded terminal, and carrying out voltage-current conversion,

said resistor circuit is comprised of a pair of resistor circuits each electrically connected in series to each of said active devices through said grounded terminal of each of said active devices, and each controlling a conversion gain of each of said active devices,

each of said resistor circuits having a variable resistance, and including a negative resistance device.

3. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said negative resistance device has a variable resistance.

4. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said resistor circuit is comprised of:

one or a plurality of resistance device(s) electrically connected in series to said active device; and

a negative resistance device electrically connected in parallel with at least one of said resistance device(s).

5. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said resistor circuit is comprised of a first circuit comprised of a resistance device and a negative resistance device electrically connected in series to each other,

said first circuit being electrically connected in series to said active device.

6. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said resistor circuit is comprised of a first resistance device electrically connected in series to said active device, and a second circuit electrically connected in parallel with said first resistance device,

said second circuit being comprised of said negative resistance device, and a second resistance device electrically connected in series to said negative resistance device.

7. (Original): The voltage-current converting circuit as set forth in claim 2, wherein said negative resistance device of said pair of resistance circuits is comprised of a pair of active devices electrically connected in cross to each other and operating differentially with each other, and each receiving, as an input signal, a node signal either at a connection node at which said active device and said resistor circuit are electrically connected to each other or at any connection node in said resistor circuit.

8. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said negative resistance device is comprised of a field effect transistor or a bipolar transistor.

9. (Original): The voltage-current converting circuit as set forth in claim 8, wherein a resistance of said negative resistance device is controlled by controlling either a source voltage or an emitter voltage of said field effect transistor or bipolar transistor.

10. (Original): The voltage-current converting circuit as set forth in claim 9, further comprising a voltage-providing circuit electrically connected between a reference voltage point and either a source or an emitter of said field effect transistor or bipolar transistor, and wherein a resistance of said negative resistance device is controlled by controlling a voltage provided by said voltage-providing circuit.

11. (Previously presented): A voltage-current converting circuit which outputs a current in accordance with the voltage thereto, comprising:

an active device having an input terminal, an output terminal, and a grounded terminal, and carrying out voltage-current conversion; and

a resistor circuit electrically connected in series to said active device through said grounded terminal of said active device, and controlling a conversion gain of said active device,

said resistor circuit having a variable resistance, and including a negative resistance device,

wherein said negative resistance device is comprised of a field effect transistor or a bipolar transistor,

wherein a resistance of said negative resistance device is controlled by controlling either a source voltage or an emitter voltage of said field effect transistor or bipolar transistor, and

wherein said voltage-current converting circuit further comprises a voltage-providing circuit electrically connected between a reference voltage point and either a source or an emitter of said field effect transistor or bipolar transistor, and wherein a resistance of said negative resistance device is controlled by controlling a voltage provided by said voltage-providing circuit,

wherein said voltage providing circuit comprises an operational amplifier having a first input terminal, a second input terminal, and an output terminal; and

an active device,

wherein a voltage-control signal is input to said first input signal of said operational amplifier,

an input terminal of said active device is electrically connected to said output terminal of said operational amplifier, and an output terminal of said active device is electrically connected to said second input terminal of said operational amplifier.

12. (Original): The voltage-current converting circuit as set forth in claim 9, wherein said negative resistance device is comprised of a pair of field effect transistors or bipolar transistors operating differentially with each other,

wherein sources or emitters of said field effect transistors or bipolar transistors are electrically connected to each other.

13. **Canceled**.

14. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said voltage-controller is comprised of an active device electrically connected between a reference voltage and said connection node, and having an input terminal to which a bias signal is input.

15. **Canceled**.

16. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said resistor circuit includes a variable resistor having a positive resistance.

17. (Original): The voltage-current converting circuit as set forth in claim 16, wherein said variable resistor is comprised of an active device.

18. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said active device is comprised of a field effect transistor or a bipolar transistor.

19. (Previously presented): The voltage-current converting circuit as set forth in claim 1, wherein said active device carrying out voltage-current conversion and an active device comprising said negative resistance device are comprised of the same type of transistors having electrical conductivities different from each other.

20. (Currently amended): A filtering circuit including a combination circuit comprised of a voltage-current converting circuit, and a capacity device, wherein a pass band is controlled by varying a gain of said voltage-current converting circuit,

said voltage-current converting circuit comprising:

an active device having an input terminal, an output terminal, and a grounded terminal, and carrying out voltage-current conversion; and

a resistor circuit electrically connected in series to said active device through said grounded terminal of said active device, and controlling a conversion gain of said active device, said resistor circuit having a variable resistance, and including a negative resistance device; and

a voltage-controller electrically connected to a connection node at which said active device and said resistor circuit are electrically connected to each other,

wherein said voltage-controller controls a voltage of said connection node and compensates for voltage fluctuation caused at said connection node by variance of a resistance of said negative resistance device.

21. (Previously presented): A voltage-current converting circuit which outputs a current in accordance with the voltage thereto, comprising:

an active device having an input terminal, an output terminal, and a grounded terminal, and carrying out voltage-current conversion;

a resistor circuit electrically connected in series to said active device through said grounded terminal of said active device, and controlling a conversion gain of said active device,

wherein said resistor circuit has a variable resistance, and includes a negative resistance device,

said negative resistance device comprises a field effect transistor or a bipolar transistor,

a resistance of said negative resistance device is controlled by controlling either a source voltage or an emitter voltage of said field effect transistor or said bipolar transistor;

said voltage-current converting circuit further comprising a voltage-providing circuit electrically connected between a reference voltage point and either a source or an emitter of said field effect transistor or said bipolar transistor; and

a resistance of said negative resistance device is controlled by controlling a voltage provided by said voltage-providing circuit,

wherein said voltage providing circuit comprises:

an operational amplifier having a first input terminal, a second input terminal, and an output terminal; and

an active device,

wherein a voltage-control signal is input to said first input signal of said operational amplifier,

an input terminal of said active device is electrically connected to said output terminal of said operational amplifier, and an output terminal of said active device is electrically connected to said second input terminal of said operational amplifier.